



Tropentag, October 6-8, 2009, Hamburg

“Biophysical and Socio-economic Frame Conditions  
for the Sustainable Management  
of Natural Resources”

## Preparing for the Inevitable: The Role of Sustainable Agriculture in Addressing the Challenge of Climate Change

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### Abstract

Climate change is no longer a hypothesis. It is widely agreed to be already a reality and its effects are expected to continue and increase. Climate change will have adverse impacts on the vulnerability of poor communities and further reduce access to drinking water, negatively affect the health of poor people, and will pose a real threat to food security in many countries in Africa, Asia and Latin America and hence undermine the achievement of the Millennium Development Goals. It is generally recognised that, among all sectors, agricultural production activities are the most sensitive and vulnerable to climate change. Increases in temperature and atmospheric carbon dioxide, decreases in rainfall and increased frequency of extreme weather events, such as drought, fire and flooding will affect agricultural productivity. Agriculture also contributes substantially to climate change through emissions of carbon dioxide, methane and nitrous oxides. Sustainable agriculture is a rapidly growing field aiming at meeting the food demand of the present generation without sacrificing the needs of future generations. Sustainable agriculture is therefore vital to the pursuit of combating climate change. This paper provides a discussion on the impacts of climate change on agriculture and the role of sustainable agriculture in addressing these impacts based on peer-reviewed literature and research findings. It discusses how sustainable agriculture can assist in mitigation through various activities to reduce CO<sub>2</sub> and other greenhouse gas emissions and carbon sequestration. Sustainable adaptation options in agriculture such as high degree of diversity, intercropping and use of locally adapted drought tolerant varieties are also explained. The study also highlight how higher education in sustainable agriculture can help in adapting to climate change through training, dissemination of knowledge, breeding of new cultivars and breeds and development of models through research.

**Keywords:** Climate change, mitigation, sustainable agriculture